

micro-block subjected to intra frame coding. Therefore, the results of the DCT unit 50 can be stored in a memory or the like so as to be re-used. In this case, the number of processing of DCT in the coding portion 12 can be reduced.

In Embodiment 1, the "picture type" and the "intended coding amount" have been illustrated as coding parameters controlled by the coding control portion 11. However, for example, other coding parameters such as a "quantization matrix", a "variable-length coding language table selection number", and a "motion vector search range" can be controlled, which can be set on the picture basis in the case of MPEG coding.

As described above, according to the present invention, there are provided a DCT unit for subjecting an input image signal to DCT, a DCT coefficient counter for counting the feature amount on the picture basis using DCT coefficients output from the DCT unit, a picture type detector for detecting a picture type in coding processing in the previous stage, using the feature amount output from the DCT coefficient counter, a coding control portion for determining coding parameters in re-coding in accordance with detection results of the picture type detector, and a coding portion for conducting re-coding using the coding parameters determined by the coding control portion. Therefore, a coding efficiency can be enhanced by detecting a picture type from an image signal in re-coding an image signal subjected to coding processing. Furthermore, compared with a conventional re-coding apparatus, a processing circuit and a processing amount of the picture type detector can be reduced.

Furthermore, by including at least two of three kinds of picture types: an intra frame coding picture (I-picture), a forward inter-frame predictive coding picture (P-

picture), and a bi-directional inter-frame predictive coding picture (B-picture) as picture types detected by the picture type detector, an individual picture type can be detected with respect to a decoded image signal group composed of an I-picture and a P-picture and a decoded image signal group composed of three kinds of I, P, and B-pictures.

Furthermore, the DCT coefficient counter counts, as a feature amount, the sum of absolute values or the sum of squares on the frequency region basis of DCT coefficients, and the picture type detector detects a picture type in accordance with variations with time of the sum of absolute values or the sum of squares thus obtained, whereby a picture type can be detected with a smaller processing amount compared with that in a conventional re-coding apparatus.

Furthermore, the picture type detector detects, as an intra frame coding picture, a picture whose sum of absolute values or sum of squares in a high-frequency region is smaller than those of the previous and subsequent pictures, whereby an intra frame coding picture can be detected.

Furthermore, the picture type detector detects, as an intra frame coding picture or a forward inter-frame coding picture, a picture whose sum of absolute values or sum of squares in a low-frequency region is larger than those of the previous and subsequent pictures, whereby an intra frame coding picture and a forward inter-frame coding picture can be detected. In other words, a bidirectional predictive coding picture can be detected

Furthermore, the DCT coefficient counter counts, as a feature amount, the number of DCT coefficients whose absolute values are larger or smaller than the

previously set threshold values, and the picture type detector detects a picture type in accordance with the number thus obtained, whereby an intra frame coding picture can be detected.

Furthermore, the picture type detector detects, as an intra frame coding picture, a picture having a smaller number of DCT coefficients whose absolute values are larger than threshold values or a picture having a larger number of DCT coefficients whose absolute values are smaller than threshold values, whereby an intra frame coding picture can be detected.

Furthermore, the coding control portion determines coding parameters using the picture type detected by the picture type detector so that coding processing is conducted with the same picture type as that in the previous stage, whereby re-coding processing with a satisfactory efficiency can be conducted with less image quality deterioration.

Furthermore, the coding control portion determines coding parameters using an intended coding amount set in accordance with the picture type detected by the picture type detector so that coding processing is conducted with the same picture type as that in the previous stage, whereby re-coding processing with a satisfactory efficiency can be conducted.

Various other modifications will be apparent to and can be readily made by those skilled in the art without departing from the scope and spirit of this invention. Accordingly, it is not intended that the scope of the claims appended hereto be limited to the description as set forth herein, but rather that the claims be broadly construed.